



Determinants of Environmental Disclosure. Does Leverage Matter? Reflection from Firms Listed in the Nairobi Security Exchange

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Abstract

This paper aimed to examine the effect of leverage on environmental accounting disclosure among the firms listed in the Nairobi Securities Exchange, Kenya. The research was guided by the stakeholder's theory. The study adopted both explanatory and longitudinal research designs. The target population comprised of the 65 listed firms at Nairobi Securities Exchange from 2008 to 2017. However, inclusion criteria were the 27 listed firms consistently operating from 2008 to 2017 giving a total of 270 firm-year observations. The findings showed that leverage ($\beta = -.16, p < .05$) had a negative and significant effect on environmental disclosure in Kenyan listed firms. Similarly, the overall R^2 showed a joint contribution of 17% of predictor variables that explain environmental accounting disclosure. The study concludes that leverage is a key predictor of environmental accounting disclosure. Firms listed at the Nairobi Securities Exchange ought to reduce debt financing so as to increase the level of environmental accounting disclosure.

Keywords:

Leverage
Environmental accounting disclosure
Stakeholders theory
Board size
Firm size.

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1. Introduction

Over the previous few years, the demand for corporations to be socially accountable and environmentally sensitive has increased. Perhaps stakeholder's consistent and increasing requirements have resulted in businesses investing strongly in environmental expenses (Jeroh & Okoro, 2016). To begin with, environmental issues previously were given less attention and minimal significance due to the absence of economic value, this can no longer be maintained since the issue has attracted domestic and international attention. The main strategy for assessing the environmental footprint of a company is to examine whether they are involved in environmental disclosure (Jeroh & Okoro, 2016). The new corporate reporting order presently needs businesses to incorporate environmental responsibility into their reporting of profitability. This awareness has resulted in an enhanced understanding of corporate social responsibility, measuring an organization's achievement not only in terms of its economic results but also in terms of its social and environmental impact. According to Dissanayake, Tilt, and Lobo (2017) information on environmental accounting may be financial or non-monetary, but accountants are trying to transform qualitative environmental information into quantitative information.

According to Masud, Kaium, and Hossain (2016) argued that positive or negative environmental disclosure indicates whether the organization is environmentally friendly or harmful. In addition, non-financial data on financial, social and environmental results promotes the knowledge of leadership obligations by stakeholders (D'Amico, Di Vita, Chinnici, Pappalardo, & Pecorino, 2014). According to Behram (2015) corporations reveal environmental information in their annual report to increase their visibility and send specific signals and messages indicating that companies are conscious of environmental problems. Furthermore, companies may gain from offering the public with more information by reducing their capital costs and increasing their shareholder's pure money flows, thereby improving their values (Omama & Claire, 2010).

According to Bassey, Sunday, and Okon (2013) environmental accounting is intended to provide information for assessing the conduct of a company towards its surroundings and the financial impact of such actions. The environmental accounting system, therefore, offers economic data in monetary units as well as non-financial data in physical units (Panigrahi, Zainuddin, & Azizan, 2015). Irish (2000) argued that environmental accounting covers all information relating to the environment including environment-related expenditure, environmental benefits of products and details regarding sustainable operations. In addition, Yakhou and Dorweiler (2004) argued that environmental accounting covers the whole accounting field. Therefore, the reports generated by environment accounting serve both the internal and external users of information. Furthermore, the information also enables managers to make pricing choices, control overheads, and budgeting for capital. It offers the public and the economic community with data that is of interest (Beredugo & Mefor, 2012).

In modern times the connection between company organizations and their environment faced dramatic changes. Until recently, environmental and social issues were not treated seriously in management goals because they were not considered to have any important economic effect. But in an effort to obtain credibility, however, most organizations acknowledged the significance of their environment to their companies and the need to protect it Pereira Eugénio, Costa Lourenço, and Morais (2013). According to Díez-Martín, Prado-Roman, and Blanco-González (2013) asserted that a number of corporations failed not because they lack funds or because of defective products, but due to complete loss of their legitimacy or deterioration.

Environmental accounting and reporting improve decision-making quality. It allows businesses to set objectives to reduce major environmental indicators such as greenhouse emissions, gas emissions, power use, resource use. In addition, through environmental accounting and reporting, corporations understand the need to change unsustainable consumption, unfavorable patterns of production, thereby protecting and managing natural resources accessible (Beredugo & Mefor, 2012). Therefore, accounting information is necessary for accountability, comparability, and probity. Nonetheless, the lack of such information could be equal to prejudice, non-transparency, fraud, and risk-taking. The situation could dissuade sponsorships from customers, vendors, investors, surrounding communities and possible public sanctions that are becoming aware of the contribution of an organization to sustainable development (Beredugo & Mefor, 2012). Thus, it is extremely important to determine the effect of leverage on environment accounting disclosure.

2. Theoretical Framework

The study was anchored on stakeholder theory. In the context of these developments, the concept of stakeholders first emerged as a defense of the company's social obligations and a statement that executives must have moral obligations towards other stakeholders, not just their shareholders (Hendry, 2001). These interested parties are the stakeholders with a stake in the company and they are a critical factor in determining the success or failure of the company. According to stakeholder theory, the organization involves a range of stakeholders and each of them deserves some return for their participation (Crowther & Jatana, 2005). Furthermore, Freeman (1984) made a major attempt to lay the framework for stakeholder theory growth in the early 1980s. The theory of stakeholders presumed that values are a needed component of company activities and reject the separation of ethics and economics.

The stakeholder theory's policy view treats all the company's stakeholders equally and does not take into consideration each stakeholder's authority (Deegan & Unerman, 2006; Waris & Muhammed, 2013). In addition, the normative stakeholder theory urges the executives to work for the benefits of all the stakeholders (Deegan & Jeffrey, 2006). Furthermore, with regards to the managerial perspective of stakeholder theory is concerned, it takes into account the interests of a limited number of interested parties, who have significant power to influence the organization. The power of the company relies on the nature of assets or resources held by the stakeholders (Waris & Muhammed, 2013). Moreover, the theory promotes the concept that the conduct of different stakeholder parties promotes management to match business requirements with their environment. The stakeholder theory management branch offers a structure for analyzing CSED in an organization-centric manner. The achievement of handling stakeholders properly by discharging CSED accountability is probably some type of organizational legitimacy (Van Der Laan, 2010). According to stakeholder theory, the economic performance of a firm also has a beneficial impact on voluntary environmental and social disclosure (Cho & Patten, 2007; Cormier & Magnan, 2003; Ho & Taylor, 2007) and on investment in social responsibility.

3. Hypothesis Development

According to stakeholder theory, the higher the financial leverage is, the higher the debt to equity ratio is, the greater the conflict of interest between the parties involved, such as debtors, shareholders, and managers. In addition, the demand for providing information to satisfy the stakeholders are also higher. However, companies with greater debt ratios often face financial difficulties and solvency, so it is very hard for them to decide on environmental and social expenditure according to cost and benefit theory. Furthermore, empirical literature showed that the debt-to-equity ratio is reversed to the level of disclosure (Chiu & Wang, 2014)

According to Branco and Rodrigues (2008) disclosure of corporate social responsibility and leverage has been discovered to have no connection. However, (Christopher & Filipovic, 2008; Ma & Zhao, 2009) indicated that the higher the leverage the more the company is likely to disclose social issues. In addition, it is asserted that extremely leveraged firms have fewer environmental problems to report because these firms are more likely to comply with environmental regulations (Wu, Jia - Liu, Linxiao. - Sulkowski, & Adam, 2010). Therefore, it's anticipated that the higher the financial leverage, the less likely the company would reveal social and environmental accounting.

Leverage has been suggested to explain differences in the extent of corporate economic disclosure (Demir & Bahadir, 2014). The agency theory is used in disclosure literature to clarify the motivation to provide more disclosure to executives of high-leverage corporations (Morris, 1987). In addition, Alsaeed (2006) asserted that companies with relatively greater debt concentrations in their capital structure are susceptible to greater agency costs. Managers, therefore, have an incentive to lessen the expenses of agency costs through disclosure or reveal more accounting information to meet the debenture holder's requirements (Morris, 1987). Furthermore, extremely leveraged corporations guarantee creditors that they are less likely to bypass their covenant claims by disclosing more data (Ali, Ahmed, & Henry, 2004).

According to legitimacy theory on leverage attribute, indicates that corporations may use public disclosure to convey information to stakeholders especially those pertaining to environmental impacts (Magness, 2006). Further, leverage is described as the ratio of debt to equity, it demonstrates the choice of executives on an optimal combination of funding alternatives. Moreover, because of their fixed interest capital, firms with greater leverage are generally considered to be riskier. Thus high leverage firms that fail to demonstrate that they are environmentally sensitive are likely to be threatened with their survival. Studies by Jensen (1986) for instance believed that high levered companies tend not to have incentives to invest sub-optimally in order to maximize wealth and this perhaps might render them environmentally insensitive.

Many studies indicate that leverage is a key commonly employed firm's attribute for corporate environmental disclosure (Ahmad, Salleh, & Junaini, 2003; Bouten, Everaert, Liedekerke, Moor, & Christiane's, 2012; Cormier & Magnan, 2003; Haniffa & Cooke, 2015). In addition, from legitimacy theory perspective studies such as (Ahmad et al., 2003; Maliah, Norhayati, & Fatima, 2014; Naser, Alhussaini, Alkwari, & Nuseibeh, 2016; Roberts, 1992) have demonstrated a positive connection between environmental disclosure and leverage. Nonetheless, other studies such as (Brammer, Brooks, & Pavelin, 2006; Mejda & Hakim, 2013; Toluwa, Okun, & Ikhenade, 2016) reported a negative association. However, given the inconsistent empirical findings, this study re-examined the association between leverage and environmental accounting disclosure.

Environmental reporting is affected by the capital structure in a two-fold manner. First, environmental disclosure tells creditors about how the company uses extra-contractually employed resources, such as the environment, in the manufacturing phase of the company, which is funded by the combination of debt and equity capital.

On the other side, excessively leveraged companies may not have the necessary resources available for mainly discretionary communication methods with stakeholders, such as environmental reporting. In addition, the empirical proof in the literature has also recorded the adverse impact of financial leverage on the extent of CSR and environmental reporting (Makori & Jagongo, 2013). Mohamed, Olfa, and Faouzi (2014) discovered that firms with better results of environmental disclosure indicate cheaper equity funding in their research on Tunisian firms.

The research revealed that investment in practices of corporate environmental disclosure helps to reduce equity costs for companies. Similarly, Cormier and Gordon (2001) indicate that disclosure of environmental information may boost ownership expenses for extremely leveraged companies and that such costs may make loan negotiations more hard and expensive. Moreover, according to (Wu et al., 2010) asserted that extremely leveraged firms have fewer environmental problems to report because these firms are more likely to comply with environmental regulations. For these reasons, it is also possible to expect an adverse connection between financial leverage and environmental disclosure quantity. Empirical studies such as (Ahmad et al., 2003; Brammer et al., 2006; Eng & Mak, 2003; Ho & Taylor, 2007; Wu et al., 2010) have also recorded this adverse connection. Therefore, based on the above link between leverage and environmental accounting disclosure and with little and inconclusive findings, this study hypothesized that:

H₁: Firms with high leverage have a high probability of disclosure of environmental accounting information.

4. Research Methodology

The research sought to describe and explore the perceived reality of environmental disclosure and leverage quantitatively. This approach to positivism has been implemented in this research. Positivism is often linked with quantitative, scientific, traditionalist and objective research especially when the data is predetermined and highly structured which is related to the understanding of this research (Gioia & Pitre, 1990). In addition, this study adopted the longitudinal study which comprised 27 listed firms from the Manufacturing, Agriculture sector, Constructions & Allied, Energy & Petroleum and Automobiles and Accessories listed in Nairobi stock exchange. Furthermore, the period of the empirical analysis was ten years for firms that have consistently operated from 2008 to 2017 giving 270 observations. The study collected secondary data using content analysis from the audited annual financial reports which were sourced from capital market authority or downloaded from <http://www.cmarcp.or.ke/index.php/financial-reports-accounts>, company website, and <http://africanfinancials.com>.

5. Measurement of Variables

The study used an environmental disclosure index to measure environmental accounting disclosure. In addition, the environmental disclosure score (EDS) was calculated by assigning dummy scores based on data being available. Firms who disclose information on a particular item were assigned a value of 1 or otherwise 0. Similarly, the value of each company's (EDS) was calculated as the proportion of complete disclosure results to the highest possible results (complete amount of items included in the index) as shown in Table 1.

Table-1. Measurement of variables.

Measurements variable name	Measurement of variables	Author(s)
Dependent variable		
Environmental accounting disclosure	Environmental accounting disclosures was measured by Environmental Disclosure Index (EDI) adopted from the Global Reporting Initiative (GRI 2008).	Ezhilarasi and Kabra (2017)
Independent variables		
Leverage	Ratio of debt to equity.	Rafique (2010)
Control variables		
Board size	Determined by taking the number of directors sitting on the board.	(Jehn & Bezrukova, 2004; Roberson & Park, 2007)
Firm size	Measured as the log of total asset.	Henry (2010)

6. Model Specification

The study employed the hierarchical multiple regression model (Baron & Kenny, 1986). The hypothesis was tested first using the random-effects model, fixed-effect model, and thereafter a Hausman test was carried out to establish which of the two models was the best fit in predicting the change in environmental accounting disclosure among selected listed firms in Nairobi Securities Exchange as specified in the equation below:

$$EAD_{it} = \beta_{0it} + C + \beta_{1it}LV_{4it} + \varepsilon$$

Where:

EAD; Environmental accounting disclosure.

α ; Constant term or intercept.

β_0 and β_1 ; Beta coefficients.

C; Control Variables (Board and firm size).

LV; Leverage.

BED; Board education diversity.

ε ; Random error term.

7. Results

The company's descriptive statistics provide a summary of research variables statistics. Table 2 presents descriptive statistics and correlation results on the dependent and independent variables. In addition, using a scoring framework to create an EDI, consistent with prior research findings, the results show that the mean value of disclosure of environmental accounting ranged from a minimum of 0.06 to a maximum of 0.87. The average value for environmental accounting disclosure was 0.53. Although the level of environmental accounting reported during the period 2008 to 2017 is low on an aggregate basis, the extent of environmental disclosure has increased between 2008 and 2017 as well as the number of Kenyan companies disclosing environmental information. Indeed, despite the low average value of the

environmental disclosure index, it has positively evolved, both overall and in each industry. It can, therefore, be claimed that the environmental reporting practices of the Kenyan companies have improved over the period of time studied, although their level of environmental disclosure is still below those of other developed nations, such as Spain.

Leverage was at a mean of 1.62 with a minimum of 0.0 and a maximum of 23.09 on average. The board had a minimum of 2 members and a maximum of 19. While, on average, the board is composed of 9 members (mean = 9.42). Furthermore, the firm size was at a mean of 9.68 with a minimum of 8.25 and a maximum of 11.28. The findings also revealed that leverage had a negative and significant correlation with environmental accounting disclosure ($r = -0.184$). However, board size and firm size did not have a significant correlation with environmental accounting disclosure.

Table-2. Descriptive and correlation results.

Obs = 270	Min	Max	Mean	Sd	Skew	EAD	Lev	BS	Fs
EAD	0.06	0.87	0.53	0.22	-0.69	1			
Lev	0.00	23.09	1.06	2.39	5.53	-0.184**	1		
BS	2.00	19.00	9.42	3.64	-0.23	-0.072	-0.124*	1	
FS	8.25	11.28	9.68	0.60	0.14	-0.039	0.074	-0.028	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

8. Testing of Hypothesis

The research first tested the hypotheses using the random effect model. The appropriate outcomes to be noted from Table 3 are the p-values and the regressor's coefficient. The significance level is set at 95% levels, with p-values greater than 0.05 considered to be insignificant. The random model showed that a 19% variation in environmental accounting disclosure was explained by leverage, the board size, and company size. The Wald χ^2 test is used to check whether the response variable, environmental accounting disclosure is dependent on the model. In addition, if the p-value related to the Wald χ^2 is < 0.05 then the response variable significantly depends on the model. From the findings, Wald $\chi^2 (3) = 64.92$, p-value = 0.00 indicating that environmental accounting disclosure depends on the model showing that the change in EAD dependent on the effects of the explanatory variables. Furthermore, the projected standard deviation of \hat{u}_i (σ_u) is 0.10 which is small than the standard deviation of $\hat{\epsilon}_i$ (σ_e) which is 0.66 indicating that the errors of the individual elements are less essential than the idiosyncratic error. The standard error component model assumes that the regression disturbances are homoscedastic.

In addition, the study used the model of fixed effect to test the hypothesis. The fixed-effect model, according to Bickel (2007) comprised of distinctive characteristics that do not differ over time. From Table 3, the model showed that a 17% variation in environmental accounting disclosure was explained by leverage, the board size, and company size. Furthermore, based on the results of the Hausman test, the fixed-effect model was used as the best fit model in the final analysis to overcome the deficiencies associated with the results of the fixed effect (Wachira, 2017). Similarly, the R-square of 0.17 reveals a quite strong strength of the relationship between the model and the variables, that approximately 17% of the variation in the output can be explained by the independent variables in the model. Further, this relationship is statistically significant as the F value (F value = 23, $p < 0.0$) of the model is significant at the 0.01 level.

Findings from Table 3 showed that the hypothesis failed to be rejected ($\beta -0.16$, $p = 0.02 < 0.05$). This indicates that high-leverage corporations in Kenyan are likely to lower their level of environmental disclosure. The finding support (Mejda & Hakim, 2013) the opinion that there is a negative connection between company leverage and environmental disclosure determinants. The study findings contrary to that of Cormier and Magnan (2003) revealed that leverage did not significantly influence the level of disclosures. Similarly, Ahmad et al. (2003) found that environmental disclosure is high for firms with a low rate of financial leverage. The higher the leverage, the riskier the company will be as interest and principal payments are obligations that are fixed. These are to be paid irrespective of the level of operating profits. Furthermore, if these obligations are not fulfilled, this may result in bankruptcy and may result in the transfer of ownership of the property of the companies from shareholders to bondholders (Ross, Westerfield, & Jaffe, 1996). From a legitimacy theory view, it can be concluded that these firms can openly reveal more quality environmental information in order to legitimize their company as well as making such firms appear less risky. Many studies, however, demonstrate a non-statistically significant association between financial leverage and the magnitude of environmental disclosures (Alsaeed, 2006; Grigoris, 2014; Ho & Taylor, 2007).

Similarly, Chiu and Wang (2014) demonstrated a reversal of the debt-to-equity ratio to the disclosure level. Furthermore, the findings are not consistent with that of (Christopher & Filipovic, 2008; Ma & Zhao, 2009) which showed that the greater the leverage, the more likely the business is to reveal social and environmental information. Previous studies have also shown that the magnitude of environmental reporting is negatively affected by financial leverage (Andrikopoulos & Krikliani, 2013; Brammer et al., 2006). Furthermore, it is also suggested that firms with greater leverage are more likely to increase the quantity of

corporate disclosure in order to decrease agency expenses. Ho and Taylor (2007). For these reasons, it is possible to expect a favorable connection between leverage and environmental disclosure, and this argument is backed by the outcomes of empirical research such as (Clarkson, Li, Richardson, & Vasvari, 2008; Huang & Kung, 2010; Meng, Zeng, & Tam, 2013).

Table-3. Fixed and random models.

Variable	Random effect	Fixed effect
EAD	Coef.(se)	Coef.(se)
LEVE	(-0.15(.02)**)	(-0.16(.02)**)
BS	(-0.14(.10))	0.03(.14)
FS	0.40(1.00)	(-0.02(.1.00))
_cons	(-1.22(.160))	(-0.63(2.11))
sigma_u	0.10	0.28
sigma_e	0.66	0.66
Rho	0.02	0.16
Overall	0.19	0.17
Wald chi2(3)	64.92	
Prob> chi2	0.00	
F(3,234)		23.00
Prob > F		0.00
Hausman		
$chi2(3) = (b-B)'[(V_b-V_B)^{-1}](b-B)$		
= 12.37		
Prob>chi2 = 0.0062		

9. Conclusion and Recommendations

Findings showed that leverage reduces the environmental accounting disclosure. The study finds that companies with high financial leverage reduce the volume of corporate social disclosure while companies with relatively lower financial leverage have sufficient funds for financing corporate social disclosure. Therefore, the study recommends that firms should engage in voluntary corporate social disclosure no matter the level of their financial leverage. Consequently, this research calls for a more proactive effort from policymakers and other standard-setting organizations on the need to introduce a standard framework for the mandatory disclosure of corporate environmental information. This effort will yield to a great extent a higher level of environmental disclosure as well as bringing about standardization in the environmental disclosure design. This will eventually enhance comparability and make it easier for investors to determine which companies are more socially responsible. In order for firms to sustain themselves in a global market over a long period of time, they should disclose environmental information irrespective of their multinational or domestic status, leverage or earning capacity.

The study offers a significant contribution to academic research and practice. While, it is recommended that further studies should evaluate the influence of other firm's attributes (Macro factors such as inflation, interest rates, and GDP) on environmental accounting disclosure. Lastly, future research can be extended to incorporate other sectors of the economy.

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